

TESTIMONY OF
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BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

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Thank you, Chairman Bingaman and Members of the Committee. I am Benjamin H. Grumbles, the Assistant Administrator for Water at the EPA, and I appreciate the opportunity to describe the Agency's important work on regulatory aspects of carbon dioxide sequestration.

This Administration is committed to taking timely and responsible actions to confront the serious challenge of global climate change. EPA believes innovative solutions will be critical to meeting this long-term challenge, including technologies and practices to mitigate greenhouse gas emissions. The Administration is actively investigating the prospects for carbon capture and storage (CCS), a process that involves capturing carbon dioxide (CO₂) from power plants and other industrial sources and injecting it into deep subsurface geologic formations for long-term storage. CCS is one of a portfolio of innovative technologies that could make a significant contribution to reducing greenhouse gas emissions to the atmosphere and EPA is committed to advancing such efforts in a manner consistent with our obligation to safeguard public health and the environment as required by the Safe Drinking Water Act (SDWA).

EPA staff are evaluating many aspects of CCS technology and deployment,

focusing our efforts in two areas: (1) partnering with public and private stakeholders to develop an understanding of the environmental aspects of carbon capture and storage that must be managed for the necessary technologies to become a viable strategy for reducing greenhouse gases; and (2) ensuring carbon dioxide storage is conducted in a manner that protects underground sources of drinking water. My testimony focuses on the second of these two areas, EPA's development of a regulation for geologic sequestration (GS) of CO₂ and the collaboration taking place to support such efforts, all of which are relevant to your consideration of Section 5 of Senate Bill 2323.

Over the past several years, EPA has been coordinating with the Department of Energy (DOE), the lead agency for research and development of CCS technology. As DOE has developed a Carbon Sequestration Technology Roadmap for the development and deployment of this technology, EPA has been working to design an appropriate management framework for geologic sequestration. By engaging in DOE's expansive R&D program early and working with stakeholders on all sides of this issue, EPA is well-positioned to help in the permitting of future carbon dioxide underground injection wells.

REGULATORY SCOPE, CONTENT, AND TIMEFRAME

EPA has statutory authority under the SDWA to carry out the Underground Injection Control (UIC) program to protect underground sources of drinking water from the injection of fluids for disposal or storage. In March 2007, EPA issued technical guidance to help State and EPA Regional UIC managers in processing permit applications for GS demonstration projects under the general UIC regulations. Recognizing that the technology is rapidly progressing towards full-scale deployment,

Administrator Stephen Johnson announced, in October 2007, EPA's plans for developing national rules for full-scale GS of carbon dioxide recovered from emissions of coal-fired power plants and other facilities. EPA will propose regulations in the *Federal Register* this Summer to ensure that carbon dioxide injection is done in a manner that does not endanger underground sources of drinking water.

Under the SDWA, EPA develops minimum requirements for state UIC programs. States may develop their own regulations for injection wells in their State. These requirements must be at least as stringent as the federal requirements (and may be more stringent). Annually, billions of gallons of fluids are injected underground through wells authorized under State and Federal UIC Programs. This includes approximately 35 million tons of carbon dioxide that are injected for the purposes of enhancing oil and gas recovery. EPA's proposed regulations will build on the UIC Program's many years of experience in safely injecting fluids, including carbon dioxide, into the subsurface.

The proposed regulation, currently in development under an accelerated schedule, will take into account the EPA's existing UIC program requirements. Key components of the proposed regulation will include requirements related to: (1) geologic site characterization to ensure that wells are sited in suitable areas to limit the potential for migration of injected and formation fluids into an underground source of drinking water; (2) well construction and well operation to ensure that the wells are properly constructed and managed; (3) well integrity testing and monitoring to ensure that the wells perform as designed; and, (4) well closure, post-closure care and financial responsibility to ensure proper plugging and abandonment of the injection well. We will also discuss long-term liability and seek further comment on this issue as part of the proposed rulemaking.

Importantly, the proposal will also include public participation requirements that would be associated with issuance of permits. We will assess the costs of carrying out regulations for geologic sequestration programs as part of the economic analysis for the rulemaking.

EPA is reviewing available data on existing demonstration projects to inform our decision-making and development of the rule. Once a proposal is published, EPA will review public comments and take into account any new data and demonstration project outcomes prior to publishing a final rule by 2011. EPA's timeframe for the proposed rulemaking is consistent with the time frame for the DOE Roadmap, which projects full-scale project deployment to begin in the 2012-2020 timeframe. To ensure that GS can be deployed as rapidly and safely as possible, EPA is using an adaptive approach that will allow the Agency to collect information and use data from DOE demonstration and other early projects to inform the final regulation and any subsequent revisions, if necessary.

COORDINATION AND COLLABORATION

Within EPA, the Office of Water and Office of Air and Radiation are working together on all activities related to geologic sequestration in order to conduct technical and economic analyses, develop risk management strategies, collaborate with key stakeholders, and clarify the relationships among various statutes (including the Safe Drinking Water Act and Clean Air Act) and EPA regulations.

EPA is working closely with DOE to leverage existing efforts and technical expertise. EPA and DOE are coordinating with Lawrence Berkeley National Laboratory to answer key technical questions regarding impacts on groundwater and underground

formations. The Agency is also monitoring the progress of research being conducted by organizations such as the Pacific Northwest National Laboratory, Lawrence Livermore National Laboratory, and international projects such as Sleipner, In Salah, and Weyburn to help inform the regulatory framework.

The DOE's Regional Carbon Sequestration Partnerships are conducting demonstration projects to gather data on the effectiveness and safety of GS. These Regional Partnerships will implement many small and large-scale field tests of carbon dioxide injection throughout the country in a variety of geologic settings. One goal of the technical permitting guidance EPA issued in March of 2007 is to promote the exchange of information to support the development of a long-term GS management strategy.

EPA will also engage with the Department of Transportation, Department of Interior, States, and Tribes during the rulemaking process. EPA has worked closely with key organizations such as the Groundwater Protection Council (GWPC) and the Interstate Oil and Gas Compact Commission (IOGCC), which represent States that implement UIC programs, and we will continue to do so throughout the regulatory process. For example, the Agency has reviewed the IOGCC report entitled "Storage of Carbon Dioxide in Geologic Structures: A Legal and Regulatory Guide for States and Provinces." The document's discussion of issues such as permitting and property rights may be very useful as we develop regulations.

In December 2007, EPA established a workgroup on geologic sequestration to provide input to the proposed regulation. The workgroup includes EPA and DOE staff, as well as representatives of four state agencies, two of whom were recommended by the IOGCC and two by GWPC. Thus far, the workgroup has provided input on various

aspects of the regulatory framework and has begun to draft issue papers on key issues.

Over the past several years, the Agency has been holding workshops, attending conferences and meeting with public and private stakeholders including industry experts, legal experts, technical experts, and environmental advocates to gather useful input. Our past experience gives us confidence we can work closely with key stakeholders and experts to develop well-designed regulatory approaches.

This past December, EPA held a meeting that focused on the potential regulatory framework for geologic sequestration. The two day workshop, held in Washington, DC, was attended by more than 200 stakeholders representing government, research institutions, industry, public interest groups, law firms, and the general public. Another stakeholder meeting is planned for February 26 and 27, 2008 in Alexandria, Virginia. Additionally, over the past year EPA has held technical workshops with researchers and stakeholders to discuss technical considerations for establishing a GS framework.

CONCLUSION

EPA is committed to working with our public and private partners to accelerate the important work underway to realize the significant potential of carbon dioxide capture and geologic storage. EPA will continue to engage with other federal agencies and encourage participation of states, associations, public interest groups, industry, and other stakeholders as the Agency moves forward on this critical path towards development of a regulatory framework. Consistent with the goal of Senator Kerry's bill, our goal is to develop sound regulations that will enable full-scale CCS projects to move forward without endangering underground sources of drinking water.

Thank you, Mr. Chairman and members of the Committee for this opportunity to describe EPA's important work on carbon sequestration. I would be happy to answer any questions you may have.